

AMENDMENTS TO THE CLAIMS

- 1 1. (Currently amended) A method for fabricating a magnetoresistive sensor comprising:
- 2 a) providing a magnetoresistive structure including one or more ferromagnetic
- 3 layers;
- 4 b) disposing a mask between the magnetoresistive structure and an ion source,
- 5 wherein the mask covers selected portions of the magnetoresistive structure to
- 6 define a sensor; and
- 7 c) exposing one or more unmasked portions of the structure to ions to
- 8 substantially reduce or eliminate a magnetoresistance of the unmasked portions
- 9 substantially near room temperature while leaving the magnetoresistive
- 10 structure substantially intact; allowing widths of the magnetoresistive sensor
- 11 between about 5nm and about 200nm.
- 1 2. (Original) The method of claim 1, wherein the ions irradiate one or more
- 2 ferromagnetic layers in the unmasked portions of the magnetoresistive structure.
- 1 3. (Original) The method of claim 1, wherein the ions are implanted into one or more
- 2 ferromagnetic layers in the unmasked portions of the magnetoresistive structure.
- 1 4. (Original) The method of claim 1 wherein ferromagnetism of one or more
- 2 ferromagnetic layers in the unmasked portions of the magnetoresistive structure is
- 3 substantially reduced or eliminated, substantially near room temperature.

1 5. (Original) The method of claim 1 further comprising, prior to c), sputtering the
2 unmasked portions, wherein shadowing by the mask forms one or more tails, wherein
3 the tails are exposed to ions in c).

1 6. (Original) The method of claim 1, wherein the mask is a contact photolithographic
2 resist mask.

1 7. (Original) The method of claim 1, wherein the mask is a contact electron beam resist
2 mask.

1 8. (Original) The method of claim 1, wherein the mask is a stencil mask.

1 9. (Original) The method of claim 1, wherein the ions are projected through a mask and
2 focused onto the magnetoresistive structure.

1 10. (Cancelled).